

REMARKS

This is intended as a full and complete response to the Final Office Action dated October 29, 2004, having a shortened statutory period for response set to expire on January 29, 2005.

In the specification, paragraphs [0004] and [0020] have been amended to correct informalities. No new matter has been added by the amendments.

Claims 1-15 and 20-23 are allowed, claims 16-19 and 28-30 are rejected and claims 24-27 are objected to. Claims 1-17 and 19-30 remain pending in the application after entry of this response. Claims 1, 16, 17, 19, 24, and 28-30 have been amended and claim 18 has been canceled without prejudice. No new matter has been added by the amendments. Reconsideration of the rejected claims is requested for reasons presented below.

Claim Rejections - 35 USC § 112

Claim 29 stands rejected under 35 USC § 112, second paragraph. The Examiner states: "It is unclear to the examiner as to what applicant is referring with the phrase 'without substantially reducing admission of the drill bit' in claim 29." Applicant respectfully traverses the rejection. Admission of the drill bit refers to the force exerted on the drill bit, i.e. from the weight of a mud motor and the bit, which keeps the drill bit into contact with the ground formation that is being drilled. Reducing admission refers to reducing the force holding the drill bit into contact with the ground formation being drilled, i.e. by pulling up on a drillstring. This definition is clearly implicit with the following usage in paragraph [0003] the Application:

"Another drawback of known tools is that the admission of the drill bit will have to be reduced to allow rotation of the bent sub. The consequence of this may be that the drill bit loses its grip in the ground formation, so that instead of completing its rotation, the bent sub will return to its initial position."

Claim Rejections - Walker

Claims 16-19 and 28-30 stand rejected under 35 U.S.C. § 102(b) as being anticipated by *Walker* (US 5,535,835).

Regarding claims 16 and 19, in the response to the office action dated April 28, 2004, Applicant stated:

"Regarding claims 16 and 19, *Walker* does not teach, suggest, or disclose 'a tool ... configured to change the direction of drilling in a substantially infinitely variable manner in response to a sustained change in flow rate of a drilling fluid' as recited in claim 16 or a method, 'wherein the tool changes the direction of drilling from the first direction to any desired second direction in response to the increase in flow rate' as recited in claim 19. *Walker's* device is capable of changing the direction of drilling from a straight direction to a curved direction, the curvature of which is fixed by the offsets of stabilizers 17 and 18. (See *Walker*, col. 3, lines 26-36.) Since the curvature is fixed, it is not substantially infinitely variable. For further control, the operator of *Walker's* device must use the rotary table to turn the entire drill string. (See *Walker*, col. 4, lines 61-63.)"

In the Final Office Action dated October 29, 2004, the Examiner responds:

"In response, the examiner notes that *Walker* specifically states that the disclosed tool is used to chang[e] the drilling in 'any required direction'. Further, the claim does not indicate that the curvature is not fixed or that other elements cannot be used to chang[e] the direction of the drill bit in conjunction with the tool."

Walker does not teach, suggest, or disclose a "tool ... configured to change the direction of drilling in a substantially infinitely variable manner ... without aid from a rotary table" or a method, comprising "increasing the flow rate of drilling fluid ... wherein the tool changes the direction of drilling from the first direction to any desired second direction in response to the increase in flow rate and without aid from a rotary table" as recited in claim 19. In the above-quoted Examiner's response, the Examiner cites a portion *Walker* ("any required direction") from the following statement:

"[I]t is possible under these conditions *by alignment of the drill string 1* ... to orientate the axis of the output shaft 14 in any required direction." (col. 3, lines 44-47, emphasis added).

From the above quoted portion of *Walker* and as discussed in the above-quoted portion from Applicant's earlier response, *Walker* relies on aid from the rotary table to effect orientation of the output shaft 14 in any required direction. Therefore, claims 16 and 19 are patentable over *Walker*. Claim 30 is also patentable over *Walker* since it depends from claim 16.

Regarding claim 17, claim 17 has been amended to incorporate claim 18. Since the rejection of claim 18 now applies to claim 17, Applicant respectfully traverses the rejection. *Walker* does not teach, suggest, or disclose a tool, comprising "means for controlling the speed of rotation of the tool", which is drafted as a "means plus function" limitation. The structure is described in the last sentence of para. [0021] of the specification as follows:

"The speed of rotation may ... be controlled by means of the choking of the choke valve 41 of the channel 39 between the annular spaces 17, 36."

The Examiner cites *Walker's* lock sub 16 as corresponding to the speed control means. The lock sub 16 has a "straight mode" (Figs. 2 and 4) and a "curved mode" (Figs. 3 and 5). In curved mode, the lock sub 16 rotates with the rotary table 3 for alignment of the drill string. *Walker* does not disclose controlling the speed of the rotary table, however, assuming for the sake of argument, the speed of the rotary table is controlled at the surface by the drive/lock system 5. In straight mode, the rotor 34 rotates to turn the output shaft 13. *Walker* does not disclose controlling the speed of the rotor, however, assuming for the sake of argument, the speed of the rotor 34 is controlled by the injection rate of a mud pump at the surface. Neither of these is identical or equivalent to the choke valve 41 incorporated in claim 17. Therefore, claim 17 is patentable over *Walker*.

Regarding claims 28, and 29, Applicant respectfully traverses the rejection. *Walker* does not teach, suggest, or disclose a "tool ... configured to change the direction of drilling while drilling" as recited in claim 28 or a "tool ... configured to change the direction of drilling without substantially reducing admission of the drill bit" as recited in claim 29. In order to operate *Walker's* lock sub 16 in conjunction with alignment of the drill string by the rotary table 3, drilling must be ceased and the drill bit must be pulled from contact with the earth being drilled, which *Walker* describes as follows:

"Activation of the lock sub 16 may be effected as follows. Initially flow of drilling mud along the drill string is stopped and the drill string is hoisted so that the drill bit ceases to be in contact with the surrounding subsurface rock formations through which the borehole is being drilled.

....

The rotary table may then be used to align the drill string to orientate the output shaft 14 in the required direction, the output shaft 14 being rotated by supply of drilling mud along the rotor bypass duct 29. The drill string is then lowered so that the rotating drill bit 15 contacts the surrounding formations and drilling along a curved path is effected." (col. 4, lines 20-67).

Therefore, claims 28 and 29 are patentable over *Walker*.

Claim Rejections - *Dorel*

Claims 19 stands rejected under 35 U.S.C. 102(b) as being anticipated by *Dorel* (US 6,158,529). *Dorel* does not teach, suggest, or disclose a method, comprising "increasing the flow rate of drilling fluid for a sustained period of time, wherein the tool changes the direction of drilling ... in response to the increase in flow rate". *Dorel* discloses a tool that changes the direction of drilling in response to a mud pulse. Therefore, claim 19 is patentable over *Dorel*.

Claim Objections


Claims 24-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 24 has been redrafted in independent form. Withdrawal of the objection is respectfully requested.

PATENT

Atty. Dkt. No. WEAT/0392

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed. Having addressed all issues set out in the Final Office Action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



William B. Patterson
Registration No. 34,102
MOSER, PATTERSON & SHERIDAN, L.L.P.
3040 Post Oak Blvd. Suite 1500
Houston, TX 77056
Telephone: (713) 623-4844
Facsimile: (713) 623-4846
Attorney for Applicant(s)